



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|----------------------|
| 10/608,146 | 06/30/2003 | Ulrich Muller | 239796US0X | 8172 |
| 22850 | 7590 | 04/21/2006 | EXAMINER | |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | | LAWRENCE JR, FRANK M |
| ART UNIT | | PAPER NUMBER | | |
| | | 1724 | | |

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/608,146 | MULLER ET AL. | |
| | Examiner | Art Unit | |
| | Frank M. Lawrence | 1724 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-34 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date (4).
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. ____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: ____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

Information Disclosure Statement

2. Note that the filing date of the German reference (DE 20210139 U1) has been corrected on two of the information disclosure statements.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1, 2 and 14-17 are rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claims 1 and 4-15 of U.S. Patent No. 6,929,679.

Although the conflicting claims are not identical, they are not patentably distinct from each other

because one having ordinary skill in the art would understand that the pressure vessel of the prior patent would be capable of operating at pressures of greater than 1 bar of 45 bar, and that such pressure conditions would be selected based on the nature of the application and desired storage amount.

5. Claims 18, 19 and 21-34 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4-15 of U.S. Patent No. 6,929,679 in view of Klos et al. (6,432,176). The patented claims fully encompass and envision all of the limitations of the instant claims except that the container is non-cylindrical. Klos et al. '176 disclose a pressure vessel for gas storage that can be cylindrical or non-cylindrical (col. 1, lines 5-12, col. 2, lines 39-49). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the container of the patented claims to include a non-cylindrical shape in order to provide a vessel that fits most efficiently in a given installation space.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1724

7. Claims 9-14, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by the Japanese reference (JP 09227572 A).

8. JP '572 teaches a gas storage system for an automobile, comprising a porous organo-metallic complex formed by mixing a bidentate organic ligand, such as 2,3-pyrazine carboxylic acid, with a metal ion such as copper in a solvent, resulting in a framework that can reversibly store methane, a known source of hydrogen. A device for storing the gas includes a container for holding the complex, an entrance/exit opening for allowing the gas to enter or exit the device, and a gas-tight maintaining mechanism capable of maintaining the gas under pressure as part of a fuel cell on board an automobile (abstract, machine translation paragraphs 9, 11, 13-15, 18, 20). It is submitted that the complex will inherently have a specific BET surface area of larger than 20 m²/g because it has the same structure and storage uses as those claimed and embodied in the instant invention.

9. Claims 9-14, 16 and 17 are rejected under 35 U.S.C. 102(a) as being anticipated by the German reference (DE 20210139 U1) or under 35 U.S.C. 102(e) as being anticipated by Muller et al. (6,929,679).

10. As equivalents, either one of DE '139 or Muller et al. '679 teaches a gas storage system for an automobile, comprising a porous organo-metallic complex formed by mixing a bidentate organic ligand, such as a substituted aromatic polycarboxylic acid, with a coordinately bonded metal ion with a solvent for enhancing capacity, resulting in a framework that can reversibly store methane. A device for storing the gas includes a container for holding the complex, an entrance/exit opening for allowing the gas to enter or exit the device, and a gas-tight maintaining mechanism capable of maintaining the gas under pressure as part of a fuel cell on

board an automobile (see Muller et al. '679, abstract, col. 3, lines 31-50, claims 1-14). The complex has a specific BET surface area of larger than 2000 m²/g.

11. Claims 9-14, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by the European reference (EP 0727608 A2).

12. EP '608 teaches a gas storage system for an automobile, comprising a porous organo-metallic complex formed by mixing a biphenyl dicarboxylic acid with a metal ion such as copper in a solvent, resulting in a frame work having a BET surface area of 50-1000 m²/g (p. 3, lines 20-49, p. 4, lines 12-16, p. 10, lines 30-33, p. 11, lines 11-14). The complex is used to reversibly store methane, ethane, propane, butane, or nitrogen (p. 4, lines 21-24). A device for storing the gas includes a container for holding the complex, an entrance/exit opening for allowing the gas to enter or exit the device, and a gas-tight maintaining mechanism capable of maintaining the gas under pressure as part of a fuel cell on board an automobile (figures, abstract, p. 2, lines 30-35).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1-8, 15 and 18-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of JP '572, DE '139, Muller et al. '679, or EP '608 in view of Klos et al. '176.

15. Either one of JP '572, DE '139, Muller et al. '679, or EP '608 discloses all of the limitations of the claims except that the container is capable of storing gas under a pressure of greater than 45 bar and that the container is non-cylindrical. Klos et al. '176 disclose a pressure

Art Unit: 1724

vessel for gas storage that can be cylindrical or non-cylindrical (col. 1, lines 5-12, col. 2, lines 39-49). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the container of the patented claims to include a non-cylindrical shape in order to provide a vessel that fits most efficiently in a given installation space. Absent a proper showing of criticality or unexpected results, the storage pressure is considered to be a parameter that would have been routinely optimized by one having ordinary skill in the art, who would understand that the pressure vessel of the prior references would be capable of operating at pressures of greater than 1 bar or 45 bar, and that such pressure conditions would be selected based on the nature of the application and desired storage amount. Further, figure 18 of EP '608 suggests that the storage of methane on the complex increases with an increase of pressure up to and apparently beyond 35 bar. One skilled in the art would understand that there is an economic balance to be achieved between storage pressure and the storage capacity at the given pressure.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional references listed on the attached PTO-892 form disclose gas storage materials.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank M. Lawrence whose telephone number is 571-272-1161. The examiner can normally be reached on Mon-Thurs 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1724

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frank M. Lawrence
Primary Examiner
Art Unit 1724

fl

Frank Lawrence

4-13-06